

Basin & Range Watch

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Policy Obstacles to Rooftop Solar Build-out

June 26, 2016 - Laura Cunningham

Basin & Range Watch is a 501(c)3 nonprofit organization involved with renewable energy and the use of wildlands for energy extraction. For several years we have promoted renewable energy alternatives to utility-scale solar and wind projects that are being constructed on desert ecosystems, better alternatives such as rooftop solar and distributed smaller projects like solar parking lot canopies and commercial building solar arrays. The technology is there, microgrids have modernized, exciting new developments in battery storage are on the market, and homeowners and businesses are lining up. So why are we not seeing urban areas covered to the maximum with rooftop solar? Time and time again we are seeing policy obstacles that inhibit rooftop solar incentives for homeowners, while utilities continue to receive solar tax credits, ratepayer-subsidized capital campaigns to build long transmission lines, and the huge benefit of inexpensive leases on public lands to develop large-scale solar projects. We believe rooftop solar policy should be more supportive of homeowners who want to invest in solar.

Below we summarize the state of one such solar policy, net energy metering, that has erupted into controversy in Nevada. We have followed this case closely, as well as writing comment letters to the Public Utilities Commission of Nevada (PUCN), and attended several hearings on the subject (as well as protests). Such controversy has rippled across other states as well, as the question of utility vs distributed renewable energy continues to be debated. The Federal Trade Commission recently became involved in trying to sort it all out, by asking for comments and holding a workshop on such questions as the costs and benefits of solar. We have many comments on this topic from the perspective of a nonprofit involved in solar energy and land use.

Controversies Over Net Energy Metering —

Net energy metering (NEM) is a policy to support residential rooftop solar systems connected to the grid. The policy is a good incentive in our opinion to help encourage homeowners to install a rooftop solar array by guaranteeing a predictable pay-back over several years in a contract with a utility. This saves the utility the up-front cost of building more power plants by having a distributed "virtual power plant" spread out over many small generators who pay the costs of

installing the solar panels, often through a solar leasing company. Questions have arisen about these contracts, how much the residential generators understand these contracts, how much solar leasing companies tell the customers the details, and how much the utilities are motivated to keep their business model intact. We see this controversy partly as a tug-of-war between traditional corporate centralized utility generation models and new distributed energy generation trends (often called "energy democracy").

What Is Net Energy Metering? —

Homeowners agree to a billing arrangement that provides credit to rooftop solar generators. The meter keeps track of how much electricity is consumed by the generator's rooftop photovoltaic array, and how much excess electricity is generated and sold back to the grid. Generators pay only for the net amount of electricity used from the utility. —

Systems are 1 megawatt or less.

History in Nevada —

1997 - Nevada legislation enacts NEM, requires NV Energy to provide NEM until a 3% cap is reached. —

2014 – The cost of photovoltaic solar plummets globally. —

February 2015 – The rooftop solar leasing company Solar City opens in Las Vegas and Reno in April. —

May 2015 - Nevada Senate Bill 374 was passed and signed, which gives the Public Utilities Commission authority to establish solar metering rates, set potential interconnection fees, and reconsider the state's 3% solar cap -- instead of state legislators. Nevada jumps from the 14th-largest residential solar market in 2014 to second in the US in 2015, reaching the 235 MW cap sooner than expected in August.

Controversy Erupts —

Debate began as the cap was reached -- "NEM1" (the original policy version with the 3% cap) was set at the retail rate of electricity, and SB 374 directs regulators to establish "NEM2" tariffs to address the remuneration debate now occurring between the utility and solar installers. The Nevada PUC devised a stopgap measure to extend the retail net metering rate but only until the end of 2015. —

NV Energy petitioned the PUCN for new fees on rooftop solar and retroactive fees. This was highly controversial, older NEM1 generators were not grandfathered in unlike many other states with similar policies, thus making Nevada one of the more extreme in its solar rooftop incentive cuts. —

December 22, 2015 – the PUCN sides in favor of NV Energy. —

17,255 rooftop solar NEM homeowners in Nevada were impacted by this decision.

What the Nevada Public Utilities Commission Decision Means —

Nevada was the only state to retroactively apply new fees to existing NEM customers (no grandfathering, which other states decided to allow). —

The monthly fixed service charge for NEM generators will rise hugely: from \$12.75/month in 2015 to \$17.90/month in 2016 and then \$38.51/month by January 1, 2020 in southern Nevada, \$44.43 in northern Nevada. Non-solar customers will continue to pay the \$12.75 monthly fixed charge. —

Reduced compensation for rooftop generation will be enacted (lower per kilowatt hour credit for excess generation): the current credit of ~11 cents per kWhr would be reduced to about 9 cents in 2016, declining to 2.6 cents by January 1, 2020. —

The new rule will allow customers to use an optional time of use rate structure.

Popular Protests —

Huge protests by members of the public and solar leasing company workers ensued over these rate increases, new fees, and decreased remuneration for solar rooftop generation. We were there for the noisy crowds chanting "Bring Back Solar Jobs." Residential homeowners were present asking for clarification on rooftop solar policies. Realtors I talked to said this was a blow to an already injured housing market in Las Vegas, how would already-existing rooftop solar arrays be assessed now when a house was resold? The uncertainty might hurt housing sales. Everyone wanted answers and clarification. I talked with a local high school teacher who brought her science class to the PUC meeting to make public comments on the value of rooftop solar for mitigating climate change. They said the reduction of CO2 emissions from increased rooftop solar was important to them as young people to provide for a better future.

Events After the Protests —

December 24, 2015 -- The Nevada Bureau of Consumer Protection filed a motion for stay, as well as the Southern Nevada Home Builders Association soon after. —

The leasing companies Solar City, SunRun, Vivant exited or reduced operations in Nevada, cutting ~600 to 1,500 jobs. —

January 12, 2016 – Solar customers launched a class action lawsuit against NV Energy challenged the ruling on the grounds of the contracts clause of the Constitution. —

January 13, 2016 -- The PUCN rejected all requests to stay the order, so the new rates will go ahead. Petitions were filed for hearings by groups formed to support NEM. NV Energy, in a surprise move, petitioned regulators to re-instate a grandfathering provision (perhaps realizing how controversial this was nationally).

Second PUCN Hearing —

February 12, 2016 – The PUCN unanimously voted to keep higher rates and not grandfather in existing customers. New rate hikes taking effect were extended from 4 years to 12 years (in a small conciliatory move to existing rooftop solar generators). —

By June 2016 pro-NEM solar alliances turned in 115,000 signatures to qualify a measure for the November ballot that would overrule the PUCN decision. Solar leasing companies contributed. According to the Las Vegas Review-Journal the signatures turned in were more than twice what is needed to qualify a ballot measure for the November general election ballot. But first the solar coalition has to win its appeal to the Nevada Supreme Court from a Carson City District Court ruling that found the proposal did not qualify as a referendum.

Utilities Use Cost Shift Argument —

Utilities have been asking for fee increases for NEM generators arguing that those who have rooftop solar arrays are subsidized by homeowners who do not have solar arrays. But a study conducted for the PUCN by Energy + Environmental Economics (E3) reported to the PUCN in 2014 there were no significant costs going forward into 2016 to nonparticipating ratepayers from homeowners who install a rooftop solar system (on the order of \$0.01/kWh). The rooftop solar systems may actually reduce costs, benefiting all ratepayers. —

The PUCN claimed this study is out of date. The Nevada Bureau of Consumer Protections said that the numbers need to be vetted, that more time is needed. The rooftop solar industry told Las Vegas journalist Jon Ralston: “Let’s have a fair redo of the study.” In June 2016 the Nevada Board of Examiners approved contracting for an updated NEM cost-benefit analysis by E3, although Commissioners at the PUCN commented that this would likely not change their decision. Questions of fairness, impartiality, and objectivity remain concerning the PUC decision. With a third party study by E3 pending, there is a possibility the decision-making about fees and prices for rooftop solar will have to go back to the legislature to be hammered out.

Two different business models are at odds with each other in the NEM controversy - the central utility model such as used by NV Energy (recently bought by Warrens Buffett's Berkshire Hathaway), and the solar leasing/electric car/advanced home battery model developed by Tesla and Solar City (started by technology entrepreneur Elon Musk). Which model should be incentivised more? Do public utility commissions tend to favor one model over the other? Which model would benefit society more towards modernizing the energy generation and distribution system? Which model would most quickly lead to decarbonization of energy use?

Benefits of Rooftop Solar

What is less discussed, especially by utilities, are the numerous benefits that distributed solar systems on rooftops can provide to everyone on the grid.—

For example, rooftop solar can reduced grid congestion and increase reliability. Aggregated Distributed Energy Resources (DER) can provide grid services such as dynamic capacity and peak shaving, flexible ramping, frequency regulation, voltage and reactive power support, and more. DER can offer increased reliability and resiliency by deploying energy storage to provide backup power during routine outages. In late June 2016, power outages were planned by SCE in southern California during a heat wave and 16,000 customers had their electricity shut off after work and all night until 6 am. Some customers said they received advanced notice, others said they did not. Remote utility-scale solar projects such as Stateline Solar Project (PV) and Ivanpah Solar Electric Generating System (CSP) were apparently not enough to stave off these "routine" power outages to the Los Angeles area. But having a large distributed network of solar arrays on rooftops, parking lot shade canopies, and commercial buildings could potentially offer a reduction in peak use, especially if combined with distributed energy storage batteries. Peak use of electricity has shifted into the late afternoon hours and early evening time, and a PV-battery combination could help to shave off this peak extreme usage that tests the usual central-station power plant portfolio of the utilities in large population urban areas. NEM is the type of policy that should encourage increased DER build out to benefit grid peak usage. Hindering rooftop solar incentives is going backwards to modernize the grid. —

Rooftop solar also reduces the need for costly new transmission projects (which are paid for by utility rate increases to all customers), with associated loss of electricity on the lines. Large-scale solar PV projects are often hundreds of miles distant from load centers, and even though prices of electricity sold to the utility may be slightly less because of economies of scale of the projects, the inefficient loss of electricity on the lines across the state, and capita neededl to construct these large transmission lines should all be factored into any comparison of cost shift. The cost of new and upgraded large 500 kiloVolt transmission lines stretching across deserts to the urban coastal cities in California from remote utility-scale solar and wind projects should be considered as a burden ratepayers would not have to pay if more homeowners subscribed to NEM programs. Are NEM solar rooftop generators receiving a double grid interconnection and maintenance fee unfairly, since they already pay for transmission upgrades? Utilities can defer some distribution upgrades as more local residences switch to rooftop solar. —

Rooftop solar and DER reduce the need for construction of more natural gas power plants, especially peaker plants (which can cost \$900 million) and likely only needed for a few months of year. Under NEM, homeowners buy the solar systems themselves or through leasing companies, saving the general ratepayers money through reduced utility need for new power plants and capital campaigns. —

Rooftop solar helps move utilities toward their Renewable Portfolio Standard goals without upfront cost to them (NEM counts towards the Nevada RPS; as efficiency in the California RPS). —

Rooftop solar values low volume users and energy efficiency. With climate change a pressing global problem, anything we can do to lower CO2 emissions should be encouraged. —

There is also a value to the net excess energy generated by NEM grid-connected solar systems which needs to be discussed much more. This excess electricity the home does not use is fed back to the grid and resold by the utility to all customers, including those without rooftop solar. What is the value of this excess energy? Should it be valued higher since it often coincides with peak usage?

Rooftop solar installer jobs have been impacted by negative changes to NEM policy in Nevada, which impacts the entire economy of the communities involved.

Avoided land use is a very important benefit of placing photovoltaic panels on rooftops in the built environment. Currently there are several utility-scale PV projects that have been built or are under construction on desert ecosystems that have had to be cleared of native plant communities and wildlife, and graded, with accompanying stormwater berm and channel earthworks, new or upgraded transmission lines and substations that fragment habitat for wildlife further. A large percentage of these solar projects are on public lands, which removes these lands from other public uses and significantly impacts resources. Many of these PV projects are 2,000 to 4,000 acres in extent. These same PV panels could be distributed on rooftops. These public lands have immense biological and cultural value and should be conserved.

California NEM

California's NEM inception was in 1996.

The 5% cap on the NEM program may be reached July 2017.

1.05 Gigawatts of NEM was installed in 2015.

77,563 NEM applications were installed and in the queue at end of 2015.

California NEM Decision 2.0

On December 15, 2015 the California Public Utilities Commission (CPUC) made their decision on changes to the NEM program in that state. Rooftop solar generators would receive full retail rate credit for the energy they export back to the grid. The CPUC, in contrast to the decision in Nevada, rejected added utility demand charges and fixed fees. But an added \$75-150 one-time interconnection fee would be upheld.

The decision required NEM customers to pay nonbypassable charges of \$0.02-0.03 per kiloWatt-hour for electricity bought from the grid before netting out the exported electricity to the grid -- this could add up to >\$5/month in fees for rooftop generators. The utilities justified these new fees by saying they would pay for grid and interconnection fees of rooftop solar systems. But what about the high value of

peak use generation provided to the grid by NEM customers? Should rooftop solar generators be given credit for providing this important value to everyone?

The decision would also require NEM customers connecting in 2018 or later to start service on a time of use (TOU) rate -- higher rates would incur during peak times of usage. But again, why are rooftop solar generators not credited a higher value for their excess electricity they feed back to the grid during these crucial peak times, or the grid electricity they use less of because of rooftop solar systems?

Unlike in Nevada, existing NEM customers will be grandfathered in for the next 20 years at their former rates.

The California Office of Ratepayer Advocates supported this decision.

Trends

The new solar-plus-storage technology may be disruptive to the older utility model, and because of the net-metering cuts many people may look into advanced battery storage to pair with their solar rooftop systems to be able to store as much excess energy as possible for night use. We support this for benefits to greenhouse gas reduction and avoided land use, but in many ways it represents a loss to the grid of the benefits mentioned above.

Other Distributed Generation Policies

There are other good financing and incentivizing options for rooftop solar, and some counties, cities, and neighborhoods are turning to these policies while net-metering battles wage on.

CCAs - Community Choice Aggregators

PACE - Property Assessed Clean Energy

CEESP - California Energy Efficiency Strategic Plan

Please see this comment with accompanying photographs and illustrations on our website: <http://www.basinandrangewatch.org/Net-Metering-Nevada.html>

Thank you,

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